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The Role of Social and Familial Factors as Predicting Factors Related to Hookah and Cigarette Smoking among Adolescents in Jahrom, South of Iran

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Abstract

Background: Tobacco and hookah smoking is a worldwide problem among adolescents. The present study aimed to determine familial and social factors in predicting the tobacco and hookah smoking among high school students in Jahrom, South of Iran.

Materials and Methods: This cross-sectional study was conducted for assessing the factors affecting hookah and cigarette smoking among high school students during January to April 2015. The participants were 630 high school students (girls=315 and boys=315). The self-administered questionnaire containing students' demographics, parent education, family sizes, tobacco using, tobacco using of the family, hookah smoking, and hookah smoking in the family was used. Multiple logistic regression (MLR) models using the Enter method were fitted to assess the factors that increased or decreased the risk of smoking.

Results: The risk of cigarette smoking was increased with: cigarette smoking by sister (s) or brother (s) (36.8 [95% confidence interval (CI) (1.28-105)]; P=0.03), hookah smoking by mother (6.64 [95%CI (1.28-34.2)]; P=0.02), hookah smoking by father (OR: 5.33 [95%CI:1.88-15.07; P=0.02]), hookah smoking by mother (OR: 29.53 [95%CI:10.26-85.01, P<0.001]), hookah smoking by sister (s) or brother (s) (OR: 31.6 [95%CI: 10.71-93.3, P<0.001]), and not consult with parents (4.38 [95%CI (1.48-12.9)]; P=0.007), were significantly related to hookah smoking (P<0.05).

Conclusion

In current study, the prevalence rate of hookah smoking is notable among both male (3.8%) and female (1.6%) sexes. Despite the protective role of family in the substance use studies, in the case of hookah smoking, the family provides an opportunity for adolescence to experience hookah smoking.

Key Words: Adolescence, Cigarette smoking, Hookah use, Students.

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1- INTRODUCTION

Tobacco and hookah smoking is a worldwide problem among adolescence (1). Nearly 100,000 youths start smoking daily that over one quarter of them starts before the age of 10 (2). The increasing rate of tobacco smoking among adolescents and youths has been reported from different countries. In the United States more than 1,000 teens each day, turn to becoming daily cigarette smokers (3). Tobacco use among 13–15 years old students was reported 16.2% in Greece (4). Cigarette smoking among Iranian students has been reported between 2.5 to 17.0%. In recent years many countries conducting preventive efforts to reduce tobacco use in these vulnerable populations (1).

The determinants of smoking among teenagers have been investigated in different studies. There is clear evidence for the relationship between socio-demographic factors and smoking behavior (5). Evidence have been shown that tobacco use increased by household size, higher birth rank, school type, poor academic performance, exposure to second-hand smoke, and stress (6). A study in Nepal demonstrated that late adolescence, male gender, attending a public school, and a substantial amount of pocket money, were associated with tobacco use in secondary-school students (7). Results of a study from Iran showed that age, number of days spent with friends per week, hookah smoking or cigarette smoking by the father, hookah smoking by sister or brother, and screen time increased the risk of current smoking (8).

In a qualitative study, the range of factors affecting teenagers tendency to tobacco use were partly related to family history of smoking, having friends who smoke, poor parental control, conflicts and tension at home, divorced parents, failure to consult with parents, easy availability and relative cheapness of cigarettes, and lack of information (9).

Hookah use is another form of smoking that appears to be increasing among adolescent. There is evidence on increasing trend of hookah use among adolescents (10) .The global epidemiologic studies have been reported that the prevalence of hookah smoking is ranged from 5% to 17% for American adolescent and 6% to 34% for Asian adolescent (11). The results of a cross-sectional study on adolescence from Iran reported that 6% of participants have used hookah at least once a month and 44.9% of them at least tried hookah smoking (12). Hookah smoking is a threat to public health; therefore, indicating the hookah user's characteristics and how it influences users smoking will be essential for developing policy and treatment interventions to prevent the global and local hookah epidemic.

Previous studies on smoking have indicated associations with demographic, psychosocial, and familial factors (8, 9, 13). However, the influence of these associated factors differed across adolescent for hookah consumption and tobacco smoking due to the unpredictable nature of puberty and changes occurring during this time in the life-span. As part of this period of experimentation and change, many adolescents beginning to keep a distance from parents and trying to attain autonomy and seeking independency. Available evidence shows that most people who initiate to smoke in adolescence become regular smokers and it is difficult to stop smoking (14).

The family and peers as well as the social and cultural contexts may play a main role in initiating or facilitating of both cigarette and hookah smoking behaviors for adolescent (15). Hence, it seems necessary to study the underlying effective factors related to cigarette and hookah smoking behaviors among adolescent. The present study aimed to determine familial and social factors in predicting the tobacco and

hookah smoking among high school students in Jahrom city, South of Iran.

2- MATERIALS AND METHODS

2-1. Study design and population

This cross-sectional study was conducted for assessing the factors affecting hookah and cigarette smoking among high school students during January to April 2015. The participants were 630 high school students (male: 315, female: 315) residing in the Jahrom city, South East of Iran. Six high schools (three for male and three for female) were randomly selected from the only restrict of the Jahrom city. Equally, 105 students from all 7th grades at six high schools were randomly invited to participate in the study. The sample size was calculated based on prevalence of the smoking among students is 24% (P) (16), using the following formola (Z=1.96, p<0.05 as acceptable and a study with 80% power at 5% significance),

$$N = \frac{Z^{2}\ 1-\ \alpha/2\ P(1-P)}{d^{2}} = \frac{1.96^{2} \times 0.24.9 \times 0.75.1}{0.05^{2}} = 299.2 \approx 300$$

a total of 630 students (315 per each gender and considering attrition rate) was estimated for sample size.

2-3. Measuring tools: validity and reliability

The self-administered questionnaire assessed students' demographics, parent education, family sizes, tobacco used, tobacco used in the family, hookah smoking, and hookah smoking in the family. Content and face validity of the questionnaire were evaluated by three content experts. Reliability of the questionnaire was assessed by a test-retest study on 20 individuals within two weeks. An intra-cluster correlation coefficient of 0.79 (17) was calculated that is acceptable reliability.

To assess tobacco and hookah smoking, students were asked if they had smoked a cigarette, or used hookah or water pipe currently. Current use of cigarette and hookah was defined as using within the past 30 days.

2-3. Statistical analysis

Continuous variables are reported as the mean (standard deviation) and categorical variables are presented as a frequency and percentage. The association of age and grade point average with smoking was assessed using an independent sample t-test. Chi-square tests were used to compare the prevalence rates in the study groups. Prior to analysis of the data the dependent variable of interest, current frequent cigarette use which had binary response of Yes/No, was recoded 0, 1 (No/Yes). The coding change was made to reflect the predicted target category, current cigarette and hookah use.

Multiple logistic regression (MLR) models using the Enter method were fitted to assess the factors that increased or decreased the risk of smoking. All variables having a P-value of < 0.2 in the univariate analysis were included in the MLR model. More traditional levels such as 0.05 can fail in identifying variables known to be important (18). Data from this study were analyzed using the Statistical Package for the Social Sciences (SPSS), version 20.0. A P-value of < 0.05 was considered statistically significant.

2-7. Inclusion and exclusion criteria

All selected students (11-17 years old) that were residing in Jahrom city and were consent to participate in the study were included. The uncompleted questionnaires were excluded from the study.

2.6-Ethical consideration

This study was reviewed and approved by the Ethic Committee of Jahrom University of Medical Sciences. Questionnaires were filled without participant's names.

Informed consents were obtained from the students before the study.

3- RESULTS

Of the 630 high school students' adolescents, 315 (50 %) were female, 315 (50%) were male aged 12-17 years. All the requested students to participate in the study were agreed and completed the questionnaires. The mean age (SD) of the students were 15.68 (0.94) years, there was a significant difference between the boys 15.76 (0.94) and the girls 15.60 (0.93) in their age (P= 0.03).

Table.1 shows the socio-demographic characteristic of the participants related to cigarette and hookah smoking. The prevalence of cigarette smoking among males and females were 3.8% and 1.6%, respectively. Among students with mothers' academic education, 10.9% had experienced cigarette smoking and 7.5% of students who had cigarette smoking had fathers' with high school education degree. The mean age of hookah smokers was (15.76 [95% confidence interval (CI): 15.56, 16] vs. non-smokers 15.67 [95% CI: 15.59, 15.75]). The prevalence of hookah smoking among male and female students were 11.4% and7.3%, respectively. There was no statistical significant differences between female and males (P=0.05). **Table.2** Based on the examining factors affecting student's smoking, it was found that the risk of cigarette smoking was increased with: Cigarette smoking by sister (s), or brother (s) (36.8 [95%CI (1.28-105)]; P=0.03), hookah smoking by mother (6.64 [95%CI (1.28-34.2)]; P=0.02). Also, mothers educational level (0.09 [95%CI: 0.01-0.74]; P=0.02), medium economic status (0.15 [95%CI (0.02-0.92)]; P=0.03), Grade point average (0.73 [95%CI (0.91-26.4)]; P=0.01), and punishment at home (0.23 [95%CI (0.05-0.97)]; P=0.04) were inversely and significantly associated to cigarette smoking (P<0.05).

The results of MLR model for hookah smoking adjusted odds ratio related to participant characteristics showed that hookah smoking by father (OR: 5.33 [95%CI:1.88-15.07; P=0.02]), hookah smoking by mother (OR: 29.53 [95%CI:10.26-85.01, P<0.001]), hookah smoking by sister (s) or brother (s) (OR: 31.6 [95%CI: 10.71-93.3, P<0.001]), and not consult with parents (4.38 [95%CI (1.48-12.9)]; P=0.007), were significantly related to hookah smoking (P<0.05).

Table-1: Association between demographic variables and cigarette and hookah smoking among high school students

Variables	Cigarette Smoking (n=630)		P-value	Hookah smoking		P-value
	Yes	No		Yes	No	
	Number (%)	Number (%)		Number (%)	Number (%)	
Age, year (mean ± SD)	15.53 ±1.00	15.69±0.94	0.49	15.76 ±0.91	15.67 ±0.94	0.49
Gender						
female	5 (1.6)	310 (98.41)	0.08	23(7.30)	292(92.70)	0.05
male	12(3.81)	303(96.19)		36(11.43)	279(88.57)	
Mother's educational level						
Illiterate	2(2.74)	71(97.26)	<0.001	6(8.22)	67 (91.78)	0.01
High school	9(1.79)	493(98.21)		42(8.37)	460(91.63)	
Academic	6(10.91)	49(89.09)		11(20)	44(80)	
Father's educational level						
Illiterate	3(3.95)	73(96.05)	0.04	4(5.26)	72 (94.74)	0.16
High school	10(2)	491(98)		47(9.38)	454(90.62)	
Academic	4(7.55)	9(92.45)		8(15.09)	45(84.91)	

Maternal occupational status						
Household	14(2.41)	566(97.59)	0.14	47 (8.10)	533(91.90)	<0.001
employee	3(6)	47(94)		12(24)	38(76)	
Father's occupational status						
Unemployed	1(2.94)	33(97.06)	0.13	3(8.82)	31(91.18)	0.72
Worker	9(3.98)	217(96.02)		24(10.62)	202(89.38)	
Self-employed	7(1.86)	363(98.11)		32(8.65)	338(91.35)	
Family size						
> 4	15(3.75)	385 (96.25)	0.03	40(10)	360(90)	0.47
≤ 4	2(0.86)	228(99.13)		19(8.26)	211(91.74)	
Cigarette smoking by father						
No	10(2.13)	460(97.87)	0.13	41(8.72)	429(91.28)	0.34
Yes	7(4.38)	153(95.66)		18(11.25)	142(88.75)	
Cigarette smoking by mother						
No	16(2.55)	611(97.45)	0.001	58(9.25)	569(90.75)	0.15
Yes	1(33.33)	2(66.67)		1(33.33)	2(66.67)	
Cigarette smoking by sister (s) or brother(s)						
No	15 (2.41)	607 (97.59)	<0.001	56(9)	566(91)	0.006
Yes	2(25)	6(75)		3 (37.50)	5(62.50)	
Hookah smoking by father						
No	8(1.47)	535(98.53)	<0.001	26(4.79)	517(95.21)	<0.001
Yes	9 (10.34)	78(89.66)		33(37.93)	54(62.07)	
Hookah smoking by mother						
No	6(1.13)	523(98.87)	0.001	12(2.27)	517(97.73)	<0.001
Yes	11(10.89)	90(89.11)		47(46.53)	54(53.47)	
Hookah smoking by sister (s) or brother (s)						
No	6(1.29)	531(98.71)	0.001	11(2.76)	526(97.24)	<0.001
Yes	11(11.49)	82(88.51)		48(49.43)	45(50.57)	
Grade Point Average	14.71±2.72	16.54±2.33	0.004	15.87±2.52	16.46±2.33	0.07
Economic status						
Good	5(2.62)	186(97.38)	0.05	20(10.47)	171(89.53)	0.63
Medium	7(1.91)	360 (98.09)		31(8.47)	339(91.53)	
bad	5(6.94)	67(93.06)		8(11.11)	64(88.89)	
Parental Perceived discrimination						
Yes	12(5.45)	208(94.55)	0.002	33 (15)	187(85)	<0.001
No	5 (1.22)	405(98.78)		26(6.34)	384(93.66)	
Counseling with parents						
Yes	13 (2.60)	487(97.40)	0.76	37(7.45)	468(92.60)	0.001
No	4(3.80)	126(96.92)		22(16.92)	108(83.08)	
Punishment at home						
Yes	9(6.29)	134(93.71)	0.003	19(13.29)	124(86.71)	0.06
No	8(1.64)	479 (98.36)		40(8.21)	447(91.79)	
Quitting home after fighting and arguing with family members						
Yes	9(6.12)	138(93.88)	0.003	25(17.01)	122(82.99)	<0.001
No	8 (1.66)	475(93.44)		34(7.04)	449(92.96)	

Table-2: Association between demographic variables and cigarette and hookah smoking in the Multivariate Logistic Regression Model in high school students

Variables	Cigarette smoking		Hookah smoking	
Gender				
Female				0.49
Male	2.66 (0.61-11.51)	0.19	1.41(0.52-3.83)	
Mother's educational level				
Illiterate				0.94
High school	0.11 (0.007-1.93)	0.13	1.92(0.26-13.95)	0.51
Academic	0.09 (0.01-0.74)	0.02	1.03(0.21-5.20)	0.96
Father's educational level				
Illiterate				0.06
High school	1.11(0.05-24.11)	0.94	0.09(0.008-1.20)	
Academic	0.44(0.02-6.69)	0.55	1.03(0.21-5.11)	
Father's occupational status				
Unemployed	0		0	0.96
Worker	0.61(0.03-10.35)	0.73	0	
Self-employed	0.89(0.20-3.93)	0.88	0	
Maternal occupational status				
Housekeeper status			0	0.21
Other	7.06(0.57-87.17)	0.12	0.39(0.09-1.69)	
Family size				
> 4	0	0	0	0.58
≤ 4	0.20 (0.03-1.17)	0.07	0.06(0.0-11.69)	
Cigarette smoking by father				
Yes	2.22(0.54-8.99)	0.26		0
Cigarette smoking by mother				
Yes	0.02(0.06-8.23)	0.56		0
Cigarette smoking by sister(s) or brother(s)				
Yes	36.78(1.28-105)	0.03	7.5(0.06-92.4)	0.57
Hookah smoking by father				
Yes	2.21(0.48-10.24)	0.31	5.33(1.88-15.07)	0.002
Hookah smoking by mother				
Yes	6.64(1.28-34.24)	0.02	29.53(10.26-85.01)	<0.001
Hookah smoking by sister(s) or brother(s)				
Yes	4.89 (0.91-26.44)	0.06	31.61(10.71-93.33)	<0.001
Grade Point Average	0.73(0.56,0.94)	0.01	0.91(0.75,1.12)	0.40
Economic status				
Good	0.13(0.01-1.17)	0.07	0	0
Medium	0.15(0.02-0.92)	0.03	0	
Bad	0	0	0	
Parental Perceived discrimination				
No	0.36 (0.09-1.45)	0.15	0.41(0.15-1.11)	0.08
Counseling with parent				
No	0	0	4.38(1.48-12.93)	0.007
Punishment at home				
No	0.23(0.05-0.97)	0.04	0.92(0.29-2.93)	0.89
Quitting home after a quarrel fight				
No	0.71(0.16-3.05)	0.65	0.43(0.14-1.13)	0.14

4- DISCUSSION

This study investigated the prevalence, familial and social predictive factors related to cigarette and hookah smoking among students in Jahrom, Iran. In our study, the prevalence of cigarette smoking was 3.8% for males and 1.6% for females that relatively shows lower prevalence than the other studies (16).

The results of this study showed that hookah smoking and hookah by mother increased the risk of tobacco smoking in adolescents. Mother's higher educational level, high Grade point score, medium economic status, and punishment at home, had protective effect on cigarette smoking behaviors. Mean score in school and economic status decreased the risk of hookah smoking in students. The current study suggested that the presence of a smoker in the family was an affective factor that increased the risk of smoking in adolescents. This finding is consistent with a previous Iranian study that reported tobacco use by immediate family, increased the likelihood of smoking in adolescents (8, 17, 19). Many previous studies confirmed that tobacco use by parents and other relatives was a risk factor for intention to smoke in adolescents (20-22). Strong family monitoring and bonding were reported to be associated with a lower risk of smoking initiation among children (23). Another study reported statistically significant differences between tobacco smokers and nonsmokers according to age, grade, the mother's occupation and education (24).

The present study showed that the prevalence of hookah use was 11.43% (8.25, 15.24) in boys, and 7.30 % (4.76, 10.48) in girls. The previous nationwide Iranian study showed the prevalence of current hookah use among adolescents was 2.49% (2.02, 3.08) in boys and 1.14 % (0.87, 1.5) in girls (8). The results of our study indicated that despite the existence of gender differences between male and female Iranian students for cigarette smoking, the prevalence of hookah smoking among female students is relatively same as male. The findings are consistent with other studies when they reported the similar prevalence of hookah smoking between men and women. Hookah smoking is a growing threat in public health because of choosing it in the group entertainments between families and friends (25). Our results showed that hookah smoking by family members is strongly related to hookah smoking among adolescences. According to previous research on substance abuse, the family had the key protective role in reducing hookah smoking. However, in the case of hookah use the family provides an opportunity for adolescence to experience hookah use (26). Therefore, the threat appears more serious when misconceptions surrounding the people in families that hookah smoking as harmful familial entertainment tool is not hazardous (27).

The present study showed that there statistically significant difference between cigarette or hookah smokers and non-smokers in mother education level; in other words, the possibility of cigarette or hookah smoking among adolescents with upper levels of mother education was lower. Considering the harmful effects of cigarette and hookah smoking, public health practitioners and health care providers should focus on families, design educational tailored programs for families and implement interventions to prevent the use of adolescents to use tobacco products.

4-1. Limitations of the study

The data were collected from youths in Jahrom city who might not be representative of all students in our country. Self –reported of the questionnaire might have been introduced as the limitation of our study.

5- CONCLUSION

The prevalence rate of hookah smoking is notable among both genders male and female. Despite the protective role of family in the substance use studies, in the case of hookah smoking, the family provides an opportunity for adolescence to experience hookah smoking. Our results showed that hookah smoking by family members was strongly related to hookah

smoking among adolescences. The results of our study indicated that despite the existence of gender differences between male and female Iranian students for cigarette smoking, the prevalence of hookah smoking among female students was relatively same as male. The further efforts are needed to decrease tobacco and hookah uses among families as well as students. Therefore, school-based tobacco prevention education programs should be provide through involving parents or families to prevent cigarette smoking and hookah use among adolescents.

6- AUTHORS' CONTRIBUTION

FR was the main investigator, designing, analyzing and wrote the first draft. LJ and MM contributed to designing and finalized the drafts. All authors read and approved the paper. MN and OS helped in data collection and data entering.

7- CONFLICT OF INTEREST: None.

8- ACKNOWLEDGMENTS

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